REMARKS

Claims 13-19 and 47-51 are pending. Claims 1-12 and 20-46 are cancelled. Claims 13, 47, 48, 50 and 51 are currently amended. 48 is amended to add a period at the end.

Support for the amendments to claims 13, 47, 50 and 51 may be found in the specification as originally filed, for example, on pages 24-25.

I. The Rejection Based on Renn

Claims 13-18, 47 and 50-51 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Renn (US 2003/0048314).

Applicants respectfully submit that the present invention is not anticipated by or obvious over the disclosures of Renn and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

Renn teaches a spray deposition process spraying aerosol of ceramic particles upon a substrate together with liquid droplet sheath, wherein the liquid droplet sheath is eliminated by laser heating during the flight of the ceramic particles toward the substrate.

Renn teaches a "High Velocity" of ~10 m/s (see paragraph [0067] of Renn). Thus, it appears that Renn teaches the spray deposition of the aerosol is conducted in the environment of ordinary pressure and that the maximum velocity of the particles is about 10m/s.

Contrary to Renn, the present invention provides the technology which is today called AD (aerosol deposition) method (see the abstract of the Journal of the Japan Welding Society, vol.75, No.8, pp.639 - 647, 2006 attached), in which the deposition is conducted in a reduced pressure environment with high speed of 200 - 400m/seconds. See also Applicants' specification, page 24, lines 8-11 and page 24, line 25 of the original disclosure.

According to the AD process of the present invention, there is caused impact-solidification in the ceramic particles as a result of high-speed collision, resulting in formation of a film having dense and strong film quality and excellent adherence with regard to a base body. See, for example, Applicants' specification, page 14, lines 12-13.

With the spray deposition process of Renn (called Direct Write System), which is based upon ink-jet process, the film of the quality attained by the present invention is never reached.

For the above reasons, it is respectfully submitted that the subject matter of claims 13-18, 47 and 50-51 is neither taught by nor made obvious from the disclosures of Renn and it is requested that the rejection under 35 U.S.C. §102 be reconsidered and withdrawn.

II. The Rejections Based on Renn in View of Secondary References

Claim 19 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Renn as above in view of Matsuo (US 6,504,227).

Claims 48 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Renn as above in view of Hara et al. (US 2001/003122).

Claim 49 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Renn taken with Hara as applied to claim 48 as above and further in view of Hasegawa et al. (US 6,717,218).

Applicants respectfully submit that the teachings of the secondary references, Matsuo, Hara et al and Hasegawa et al to not overcome the deficiencies in the primary reference as set forth in Section I above. The same arguments apply also to claims 47 and 50- 51.

For the above reasons, it is respectfully submitted that the subject matter of claims 19, 48 and 49 is neither taught by nor made obvious from the disclosures of Renn in view of Matsuo, Hara et al and/or Hasegawa et al and it is requested that the rejections under 35 U.S.C. §103 be reconsidered and withdrawn.

III. Conclusion

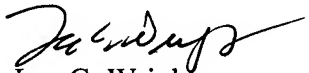
In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the rejection under 35 U.S.C. §102 and the rejection under 35 U.S.C. §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



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Room Temperature Impact Consolidation of Ceramic Particles on Aerosol Deposition and Its applications

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Figure&Table&Reference;FIG.15, REF.31

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Abstract;Aerosol deposition (AD) method is a technology to make aerosol by mixing fine particle or ultrafine particle raw material with gas, and to spray the aerosol on a substrate through nozzles in a vacuum chamber to form films. In an ordinary-temperature impact solidification phenomenon, fine particles are subject to collision on a substrate without heating the particles and substrate, and high-density polycrystalline films are formed at ordinary temperature. Therefore, substrate heating is unnecessary, because it lowers the speed of fine particles under critical velocity necessary for impact solidification due to thermal phoresis effect, which becomes disturbance of densification. In alumina and PZT, there was the optimum range suitable for the powder. The authors measured particle bombardment speed in the film formation mechanism through ordinary-temperature impact solidification using a flight time difference method, and predicted fine particle size suitable for film formation based on thermohydrodynamic analysis. They predicted a mechanism of film formation of minute ceramics, in which particles were crushed and transformed due to impulsive pressure, and nanocrystalline structure bodies were formed. They analyzed various similar coating technologies from particle velocity and particle size, and compared AD method cold spray method. As practical application examples, this paper takes up the thick film formation from alumina and yttria fine particles on a metal substrate, as well as the film formation of high insulation alumina films, and it also mentions the practical application plan of electrostatic chucks.

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